

Hollis Semple Baird – Bringing Electronic TV to Boston

By Richard Brewster

Hollis Baird is known for his efforts in the development of mechanical television. In reviewing General Television Corporation documentation dating from 1933 to 1941, I uncovered a whole new aspect to Baird's work in electronic television, detailing one man's struggle against government and corporate power, in his attempt to bring television to Boston



Early in 1973, a fellow employee mentioned that when he was living in Concord, New Hampshire, he remembered seeing a very old TV in a radio shop window. *French's Radio Shop* was still in business when I visited that summer. I enquired about the ancient TV and, being led to a rear garage, tried to remain calm as a canvass cover was removed, exposing a Baird mechanical TV receiver in fine condition! I eagerly paid the asking price of \$85 (including a separate horn speaker). Later, I discovered that my informant had last seen the set 25 years earlier!



Fig. 1 Baird TV console

This acquisition set me on a path which eventually led to a meeting with Hollis Semple Baird at his Quincy, Mass, home on 221 Wilson Ave, in August of 1986.¹ He was suffering with Parkinson's disease and had difficulty speaking during an interview. The last time I visited, he passed a quantity of his papers to me from which most of the following is obtained.

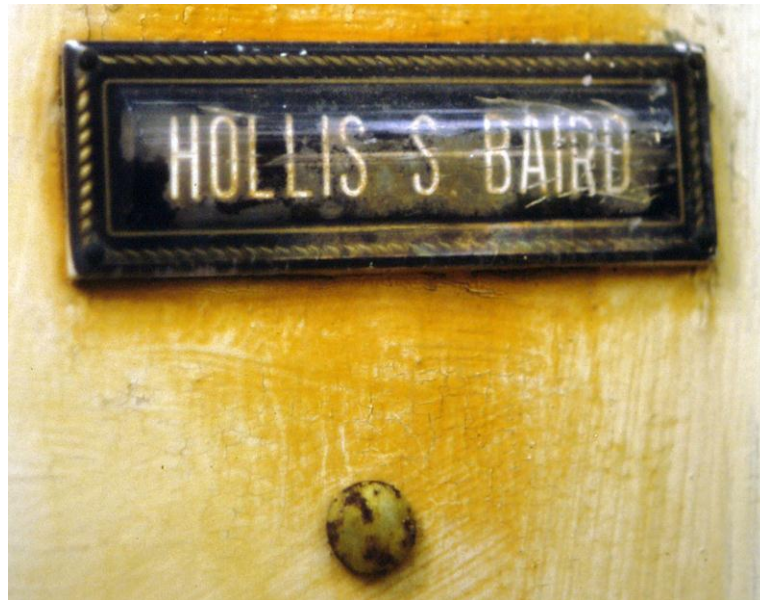


Fig. 2 Photo of Baird doorbell

He died four years later on the 16th of March 1990, at the age of 84. According to his obituary², Baird was born in Houlton, Maine³ and lived in Wollaston for many years. He was professor and assistant to the director of Lincoln College at Northeastern University from 1942 to 1982. He taught Sunday school at St. Chrysostom Episcopal Church in Wollaston for many years and also was a Boy Scout leader. Besides being a life member of the American Society of Engineering Education and the IEEE, he was also a member of Eta Kappa Nu Electrical Engineering Honor Society. Baird told me that he was broadcasting mechanical TV from 1928 till 1932, when his interests turned to the electronic system.⁴ During the mechanical era, Radio News published occasional articles about his work, stating on one occasion that, "...under favorable conditions, the features of a known person can be recognized. The movements of the lips, eyes and other features are easily discernable."⁵

In September of **1933**, the Federal Radio Commission denied a license to Baird's Short Wave and Television Corporation for an experimental electronic television station, WIXG.⁶ Nevertheless, Baird made a detailed application to the FRC, in December, for a construction permit for 'Television Research.'⁷

In August of **1934**, Federal Radio Commission authorized the General Television Corporation [new name!] to operate an experimental visual broadcasting station, call letters, WIXG. At that time, Baird, utilizing his own manufactured iconoscopes, was televising images consisting of 120 lines, expecting to move up to 180 and finally 240 lines, which he felt "supplies plenty of detail for adequate entertainment."⁸

In February of **1935**, Baird informed the FRC, in an application for license renewal, that they were then transmitting 180 line pictures at 60 frames per second. He further explained that plans were underway to increase this to 360 lines with interlaced scanning. He now believed that 360 lines would be adequate for satisfactory home television.⁹

By early **1936**, Baird had built an electronic sync generator and was transmitting 240 line pictures at 24 per second. Plans were afoot to go to 343 lines, interlaced, by the middle of 1936. They were applying to transmit on 44 MHz with a 4 MHz bandwidth, including the sound channel.¹⁰ Later that year; a report indicates that their antenna was presently 115 feet above sea level, which they wanted to increase to 250 feet. Baird noted that he was attempting to develop screen phosphors in order to produce a black and white

picture, “as we do not feel that green pictures [The only available phosphors at that time.] are suitable for public television reception.” The report also indicated that their lab had fabricated several 12 and 15-inch kinescopes producing a light yellow image in addition to the construction of eight new iconoscopes! Improvements were made in the receivers at various field-testing stations. Plans were being made to move up to 441 lines to comply with recommended RMA Television Committee standards. All of this was being accomplished with just two engineers, two research assistants and two part-time field men.¹¹ [Meanwhile, RCA had dozens of engineers and a million-dollar budget!]

In January **1937**, a license was issued to GTC to allow continuation of their operations up to February 1st, 1938.¹² The Commission additionally authorized the use of a portable test transmitter for making field intensity survey tests.¹³

A telegram from a GTC employee told of a successful trip to Corning [Glass Works] concerning the sealing of tube necks.¹⁴

According to part-time employee (and MIT student), Howard Lawrence, Hollis Baird started up the General Television Institute, which provided radio and television training at 70 Brookline Ave, Boston, MA. Lawrence additionally explained that Baird had the only licensed TV station in Boston as well as a laboratory directed towards making studio equipment including the construction of iconoscope image tubes. He said that their equipment included a sync generator, monitor and low power transmitter. For his thesis, Lawrence built a TV set which Baird used to monitor the GTC signal.¹⁵

In the December application for license renewal, Baird indicated a total value of the corporation at less than \$33,000, with a stock issue of 5000 shares.¹⁶ Attached to the application was a hand-drawn schematic of a 500-watt television transmitter.

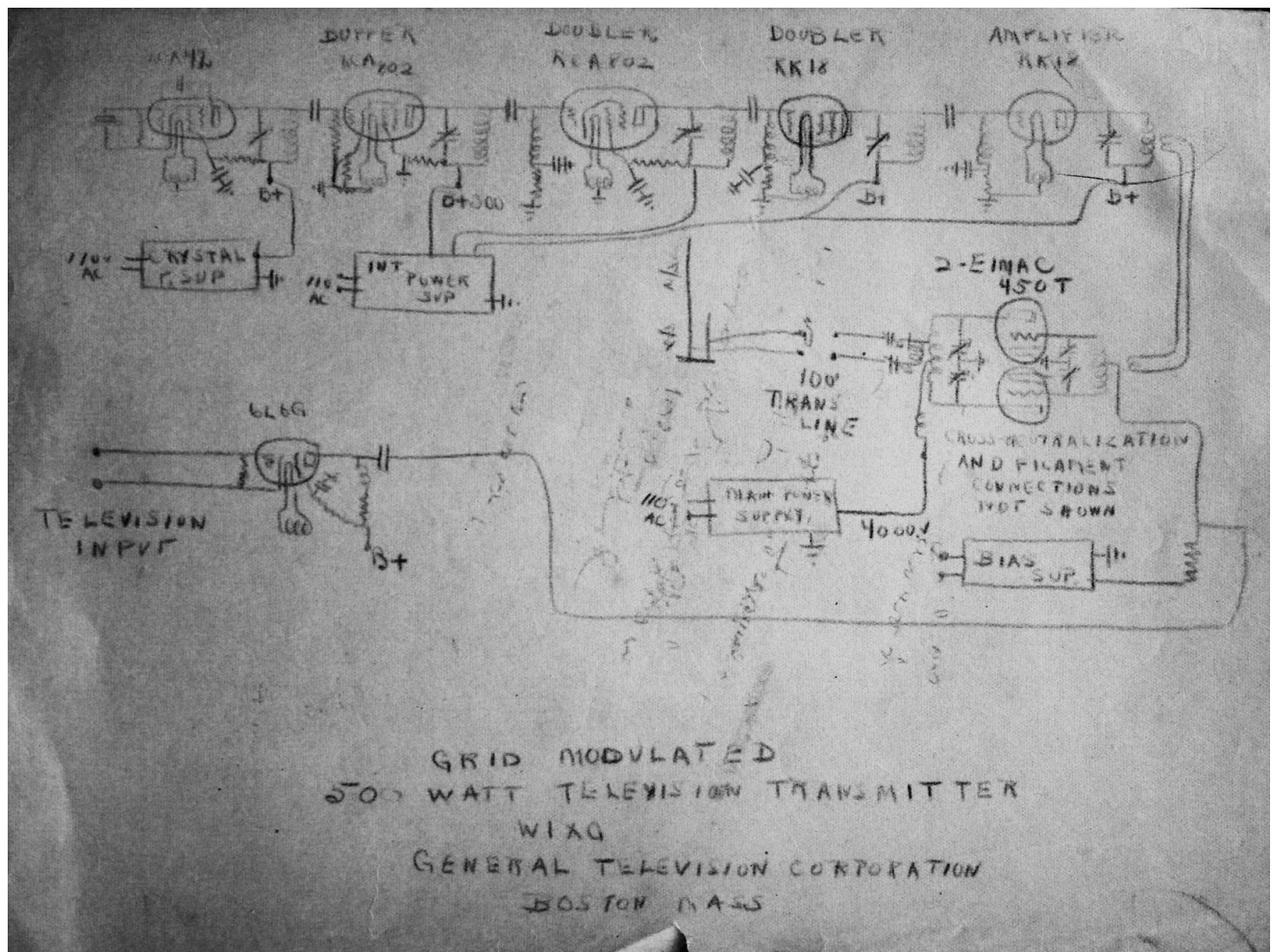


Fig. 3 Schematic

In early 1938, GTC received its license renewal for the coming year.¹⁷ But in February, Baird was notified that General Electric was requesting a construction permit for a TV station in Bridgeport, CT, and that GTC was one of a number of companies that could be affected by GE's planned operation.¹⁸

In March, a GTC report¹⁹ described plans to improve the TV station:

1. Complete a blanking circuit.
2. Purchase some 1851 iconoscope tubes from RCA, to obtain clearer pictures.
3. Complete a new deflection yoke for the iconoscope to *allow full scanning* of the mosaic.
4. Add a regulated power supply for the iconoscope camera.
5. Have the transmitter crystal reground *to allow operation on the proper channel!*
6. Finish the waveform oscillograph on the television monitor racks.
7. Finish the shading circuits *to eliminate the black spot in the middle of the image.*
8. Add 14 more 'Birdseye' lights. [The insensitive iconoscope required lots of light.]



Fig. 4 Image

Additionally, Baird explained that his school, General Television Institute, would start construction of one complete TV monitoring receiver. Additionally, a 9-inch console set would *hopefully* be purchased for \$200. They were also expecting to use a *locally available* English Baird 15-inch set as a demonstrator. The Corporation must consider hiring a person who could arrange and present a one hour program “if we are to progress in the holding of our license.” Baird further stated that GTC must provide “...regular daily transmissions of at least one hour in length. It is only by doing this that we can expect to keep other people from applying for a television license and endangering our own.” Baird pointed out that he managed to broadcast four hours a day during the mechanical era, 1929 to 1933.

On March 31st, Baird responded to a request by Allen Dumont to visit the Baird studio, suggesting that he arrive somewhat in advance of the 3 to 4:30 pm WIXG regular transmission, “...so that you might view our plant and equipment beforehand, and so that I might have a chance to personally talk with you.”²⁰ [This was apparently the beginning of negotiations that hopefully would result in an infusion of funds.]

At the end of June, RCA shipped a 12” kinescope, C-C7318C, and a video amplifier circuit diagram to GTC.²¹

Sometime that summer, Baird put together another report²² stating that since they had only one camera, monitoring equipment, and a low power transmitter, they must do the following in order to retain their license and prepare to make money when TV is commercialized:

1. Build or buy one TV receiver with a 12” black and white picture.
2. Increase transmitter power to 250 watts.
3. Add a sound transmitter.
4. Build another studio camera.
5. Acquire a film projector.
6. Hire another technician and a program director.

The cost for the above was estimated to cost \$10,000.

Dumont telegraphed that he would be coming to see Baird on October 12th.²³ The following day, Baird responded to Dumont's visit with two letters detailing his plan to upgrade WIXG with a second studio camera, increased studio lighting, a motion picture scanner, and a new high-power television transmitter. He noted that the transmitter would be built at the Dumont facility! Estimated cost would be \$10,000 to \$12,000.²⁴ [Obviously, Baird is expecting Dumont to fund this.] On the 31st of October, Baird sent another letter to Dumont, detailing RCA prices for studio cameras, equipment, and transmitters totaling almost \$90,000.²⁵ [Suggesting that Dumont was considering funding that upgrade as well!] Then, on the 21st of November, Baird stated that he was, ... "doing our best to get the deal closed here on the corporation."²⁶ W1XG station log sheets for November show that they were running tests on 46.5 MHz, sometimes for many hours each day.²⁷ In early December, Baird wrote to Dumont's attorney, Loewi, explaining that his major stockholder, Ida W. Glover, was unwilling to release her stock.²⁸ [This obviously was holding up the 'closing of the deal.']

On December 5th, GTC submitted an application for license renewal indicating that WIXG had operated for 294 hours during the previous license period. Additionally, the following work had been done:²⁹

1. Construction of iconoscopes, monoscopes, and kinescopes.
2. Construction and improvement in TV receivers.
3. Construction and operation of a film chain, for which they modified a 35 mm projector.
4. Synchronizing generator improvements; multivibrator design and framing pulse development.
5. Improvements in background transmission; AGC development.
6. Improvements in video amplifiers; reduced microphonics in iconoscope video amplifiers.
7. Checked picture reception at various receiving locations, including the Lawrence set at MIT.

Plans for the following year were to transmit single sideband, increase video bandwidth, construct projection CRTs, place more field monitors, add a sound carrier, and relocate the transmitter to a higher point.

In January of **1939**, the FCC issued license renewals to various TV stations including W1XG.³⁰

Later that month, Baird was a member of an IRE Technical Committee on Television and Facsimile.³¹

At the end of February, Baird wrote³² to Boston attorney, Mr. Trustman, concerning company finances. He concluded the letter by stating that, ... "I spent some time last week with Mr. Dumont, in Passaic, and we are hoping that the deal can be concluded soon, so that Paramount may have the honor of putting television on the map so far as the Boston area is concerned." In early March, Baird again wrote to Trustman, detailing the advantages to a prospective purchaser of W1XG. He pointed out the great value that W1XG has with the use of channel 1.³³ On March 23rd, an agreement to transfer ownership of General Television Corporation was drafted.³⁴ Then in July, Baird wrote to Mr. Loewi (Dumont representative) explaining that Dumont's final offer of \$20,000 was less than the \$25,500 that a Mr. Turner (GTC rep.) was asking. Baird believed that the company had to be sold in the present month and was preparing a detailed plan for expanding the station.³⁵

In late July, the FCC requested that GTC file an application for the specific channel assignment desired in accordance with the new Rules and Regulations, effective April 17th, 1939.³⁶

At the end of July, Baird wrote to one of the attorneys representing the potential buyer, discussing the sale of his stock as well as a salary he would receive as Chief Engineer, working for the new owners. He further

pointed out the rather minimal salary that he had received for his considerable efforts in the prior several years and as one of the founders of GTC.³⁷

On of the 5th of September, GTC provided to the FCC, the previously requested application in accordance with the new Rules and Regulations.³⁸ An included report detailed work done at W1XG from July 1934 to July 1938, as well as work presently underway:

1. Evaluation of co-channel interference from NYC stations.
2. Development of projection television for use in a local theatre.
3. Application made for a sound subcarrier.
4. Construction of a second studio camera.
5. Development of a new studio layout.
6. Plans to set up a roof studio, using sunlight for illumination during telecasting.
7. Consideration of possible telecasting Fenway Park (adjacent to W1XG) ball games during 1940.

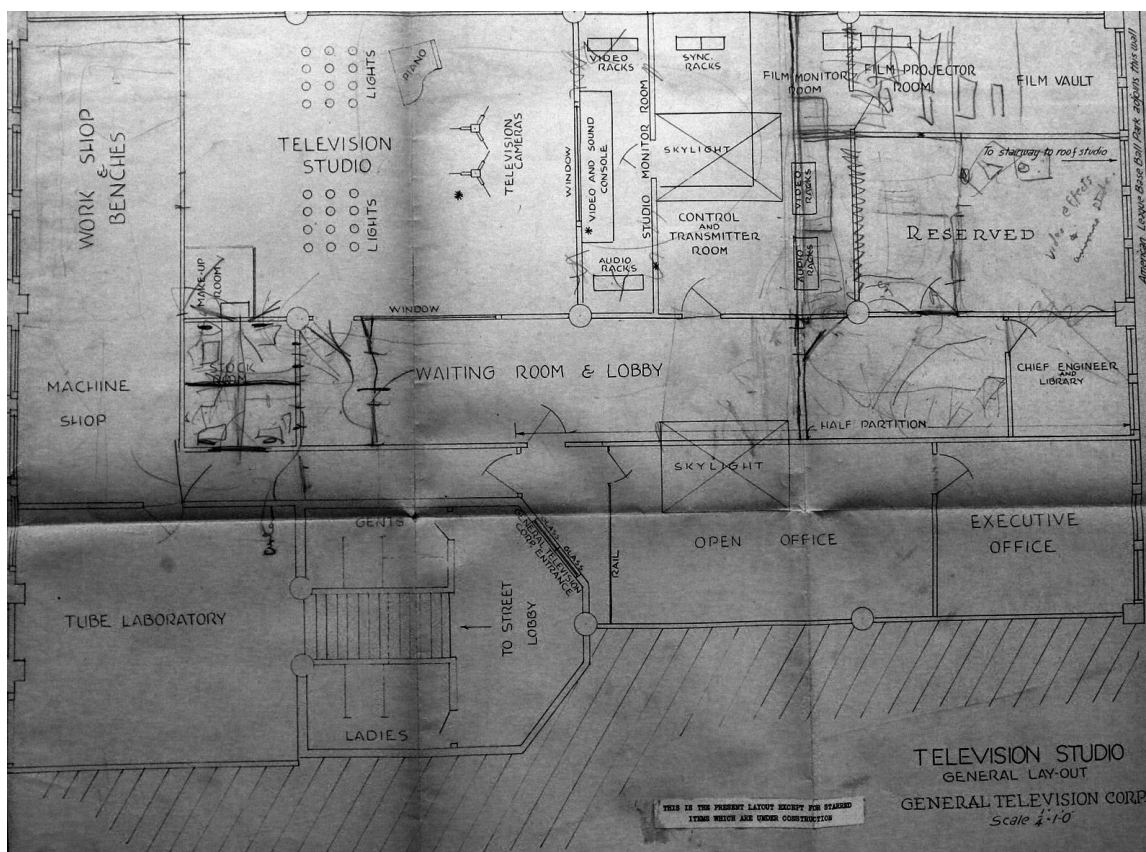


Fig. 5 Studio Layout

On October 12, Dumont returned to Boston to discuss a 'combine'. (This meeting resulted from a previous Baird trip to New York to meet with Dumont's Mr. Loewi. Later, Loewi suggested that Dumont, now being supported financially by Paramount Pictures, would be in an 'arrangement' with GTC.)³⁹ A meeting of GTC stockholders was planned for November 13th to make a decision concerning the sale of the assets of the corporation.⁴⁰

A November 24th GTC letter to the FCC took exception to the FCC plan to give channel 1 (W1XG) to the Lowell-Lawrence area.⁴¹ On December 6th, GTC submitted, to the FCC, an application for W1XG license renewal. An attachment provided a detailed report on the development of a projection kinescope. Also a

new transmitting antenna with increased antenna height was being planned to improve distant reception. A Farnsworth image dissector was being considered for the film chain.⁴²

On December 9th, Baird wrote to Paramount, going into great detail to convince them that the purchase of GTC was most desirable. He suggested that the license would be quite valuable when television became profitable. Interestingly, Baird noted that, “While the growth and public acceptance of television in the New York area has proved disappointing to date, I have always believed that television will find much greater public support in other cities.” [RCA had introduced TV earlier that year at the NY World’s Fair.] He suggested that, “With New York City the entertainment centre that it is, and the public in that area having so many other sources of amusement...” Baird further explained that he has many TV programming possibilities with local talent in Boston. He pointed out that Paramount, being in the movie business, would be a good fit to operate a TV station.⁴³

In a detailed document,⁴⁴ Baird provided ideas for TV programming, suggesting that the best evening time slot would be between 7 and 8 pm in addition to an hour in the afternoon. To encourage Paramount, he proposed transmitting movie trailers as well as local Paramount newsreels. Noting that while his license does not allow selling of time, products could be displayed in the scene. Baird claimed that NBC was using this loophole to have advertisers pay for talent in their dramatic shows, and that both *Filene’s* and *Jordan Marsh* [Famous Boston stores.] were greatly interested! [This was probably intended for transmittal to Paramount.]

Baird issued a year-end statement explaining that GTC’s shortwave transmitters, W1XAL and W1XAR, had been moved to a new location. This freed up space for TV equipment and eliminated interference. Work was underway to determine the best location for a new, higher TV broadcast antenna.⁴⁵

In early January 1940, the FCC requested that GTC “... present evidence regarding allocation of channel 1 to the Boston area.” Baird telegraphed a response indicating that he would come on the 15th.⁴⁶ In a letter to the FCC, Baird goes into great detail explaining why the Commission should allow Boston (W1XG) to be allocated channel 1, rather than Lawrence-Lowell.⁴⁷ The FCC responded that GTC, “...shall explicitly summarize the work conducted at W1XG since February 1, 1939, and specific proposals for the ensuing license period.” A temporary license would be issued when the appropriate amendment was submitted.⁴⁸ An FCC letter extended GTC’s license to March 1st, pending appropriate input from GTC.⁴⁹

On the 17th of February, Baird wrote to a Mr. John Henderson, administrator, explaining that, due to the lack of finances, he is about to give up, saying that, “The possibilities of making anything out of GTC seem to be getting more remote every day. As a result, the work that I have done in keeping the Television license alive during the past four years seems about to be lost. Even my stock interest in the Corporation is not in my possession.” He concluded by saying that he could not continue without the return of his stock certificate.⁵⁰

Baird must have gotten his stock back, since on the 23rd, he submitted the data requested by the FCC on W1XG activities.⁵¹ The W1XG license was extended to March 1st and subsequently to April 1st by the FCC.⁵² The FCC further requested additional information.⁵³ A GTC balance sheet was prepared indicating total assets of \$47,734. 32.⁵⁴

Application for a ‘sound track’ was made to the FCC on May 7th. Baird proposed to purchase an RCA 100 watt aural transmitter and to add an amplifier in order to increase that to 500 watts. Baird explained that, “Since the bulk of our investigation and development work has been toward the improvement of video

circuits...we have never filed for the sound track transmitter.” In addition, \$3000 had been made available for studio improvements. Investigation was proceeding to increase antenna height to 400 or 500 feet. An attached document included a discussion of the possible need to increase scanning lines to 507, believing that the present 441 was not good enough.⁵⁵ [Obviously, more money had been made available.]

Sometime in May, W1XG produced a television broadcasting schedule detailing programming plans for the following six weeks. It covered six days a week, at least one hour a day, split between afternoon and evening. Shows varied with dancing, instrumental, vocal and lectures (by Hollis Baird, speaking on the principles of television!).⁵⁶

On the 28th of May, the FCC received, from GTC, an amendment to their audio transmitter application, changing the location of the transmitter to a place, “just down the street from our present location.” They would eventually relocate the video transmitter there too. This would allow a greater antenna height.⁵⁷

A crude transmitter log for W1XG covered from 24 May to 21 June, and detailed video transmitter technical data as well as programming remarks.⁵⁸

On June 27th, the FCC transmitted to GTC a copy of the newest television Rules and Regulations, explaining that GTC did not comply with Section 4.72 as well as other Rules and Regulations. They specifically requested that GTC’s “...research program must include engineering experimentation tending to develop uniform transmission standards of acceptable technical quality.” The cover letter noted that the application would be considered but first GTC must comply with the new rules and regulations.⁵⁹

On July 2nd, the FCC declined to authorize GTC’s application for an aural transmitter, since it appeared that it was planned to be located separately from the visual transmitter. A request could be made for special authorization for test purposes; otherwise, GTC must amend the original aural transmitter indicating a common site.⁶⁰

On the 5th of July, the FCC cancelled the GTC TV broadcasting license [As well as all other TV and FM licenses.], effective January 1, 1941. The letter explained that the experimental license provisions allow the Commission to cancel a license at their discretion.⁶¹ [This was apparently done to vacate the original channel 1 band to make room for the proposed FM frequency band.]

On July 11th, Hollis S. Baird, Vice President [new title!], wrote to a Mr. Leahy, concerning a new (or revised?) application to be submitted to the FCC. He commented that this was discussed on a recent trip to DC [probably as a result of the above cancellation].⁶² The FCC, on September 24th, informed GTC that they were giving consideration to the prior request to set up an aural transmitter.⁶³

On December 9th, GTC sent to the FCC, an Application for Renewal of W1XG⁶⁴. Mr. Thomas L. Guernsey was listed as president and a director and shown to have owned a 43% share of GTC. Baird, listed as a director and chief engineer of WRUL, owned 29%. The value of the Corporation was listed as \$63,000. An estimated \$25,000 had been allocated for research during the next year. The latest data provided in the application included the following:

1. W1XG video carrier had been moved from 46.5 MHz to 51.25 MHz (which he referred to as the *new channel 1*) to make way for the new FM band.
2. The operating schedule was increased to more than 100 hours a month and 10 hours a week of actual programs. A weekly program schedule was being sent to all known TV receiver owners.
3. A new synchronizing generator was constructed according to RCA licensed plans.
4. An RCA camera preamplifier and blanking amplifier were acquired.

5. An oscillograph was arranged to verify sync generator output.
6. A vestigial side band filter had been installed.
7. Vacuum tube voltmeters, beat frequency oscillators, square wave generators, etc were in use.
8. W1XG was experimenting with line rates up to 729 and frame rates of 15 and 30 per second.
9. Five field receivers had been added for testing.
10. Twenty-five KW of studio lighting had been installed.

In early **1941**, Baird issued a Television Report⁶⁵, detailing work done during the past license period:

1. TV equipment upgraded: new camera preamp, blanking amp, mixing amp, timing generator, shaping circuits, line amp and video modulator. All power supplies were now regulated,
 1. The 35mm projector had been rebuilt.
 2. A new video-transmitting antenna had been installed.
 3. Evaluation done for both rotary and vibrator converters for TV sets in DC areas of Boston.
 4. Experimentation ongoing with various lead-in feed lines for TV receivers.
 5. Experimental work done to consider relaying NBC programs from New York for retransmission by W1XG.
 6. Experimentation ongoing with motion picture conversion for video transmission.
 7. The transmitter final amplifier was changed from 852's to 833's.
 8. Tests conducted using Dumont, Andrea, and US Television receivers.

Baird also prepared a document⁶⁶ detailing relations between GTC and the FCC since late 1939:

1. TV work in 1939 was limited due to the death of a major stockholder and financial supporter.
2. Negotiations were presently underway for Paramount Pictures to acquire GTC.
3. Planning was ongoing for the addition of a 'sound track' transmitter.
4. Plans were underway for the move of channel 1 to 50 – 56 MHz to allow FM use of the lower band.
5. GTC planned to move their TV transmitter to the Sears building. The FCC would not otherwise grant channel 1 to GTC, believing that the move would give proper coverage to the Boston area.

A January License Renewal Application (missing) had as an attachment, Appendix A⁶⁷:

1. Detailed operation on bands allocated by the FCC.
2. Explained experimental work with 15-frame, 729 line transmission.
3. Explained movie conversion to TV standards.
4. Detailed TV receiver antenna line experiments.
5. Presented a program schedule for the week of November 11, 1940.
6. Listed equipment upgrades.

NEWS RELEASE

PHONE COMMONWEALTH 1959

TELEVISION
STATION
W1XG

70 BROOKLINE AVENUE
GENERAL TELEVISION CORPORATION
BOSTON, MASS.

PROGRAM SCHEDULE.....WEEK OF NOVEMBER 11, 1940

MONDAY NOV. 11	2:30-3:30	Test Patterns & Visual Novelties
	8:30-8:45	Humorous Sketch...Bob Henry Pantomime on the Current Scene
	8:45-9:00	The Flying Hammers of Arnold Manchester Xylophone Novelties...Piano Acc.
	9:00-9:15	Twinkling Toes...Claire Willman Tap Dances, Popular Vocals
	9:15-9:30	The Maine Recreation Program News & Pictures of the Pine Tree State
TUESDAY NOV. 12	2:30-3:30	Test Patterns & Visual Novelties
	8:30-8:45	Rhythm & Rhyme...Alice Jean Collins A Girl, Her Piano, & Her Songs
	8:45-8:50	The Style Novelty of the Week Views from Boston Shops...Miss Thibodeau
	8:50-9:10	Lawton & His Marimba Rhythmic Patterns by 4 Hammers
	9:10-9:30	"Let's Draw" with Allen Levitt Instructions & Demonstrations
WEDNESDAY NOV. 13	2:30-3:30	Test Patterns & Visual Novelties
	8:30-8:45	The Pournier Duo...Sylvia & Armand Instrumental & Vocal Selections
	8:45-9:00	Dramatic Sketch...Back Bay Theatre Group Berniece Howe...Bob Gordon
	9:00-9:15	The Light Fantastic...Lavis Murry Tap Dances & Vocal Selections
	9:15-9:30	Songs of Yesteryear...Priscilla Merritt Old Fashioned Songs by a Colonial Miss
THURSDAY NOV. 14	2:30-3:30	Test Patterns & Visual Novelties
	8:30-8:45	Principles of Make-Up...Frank Rossi New England Conservatory Drama Dept.
	8:45-9:10	Hecht House Hobby Show...Earl Wedrow, M.C. Hobbies...Creations & Presentations
	9:10-9:30	The Gaviani Accordion Band...Frank Gaviani Youthful Stars of a Famous Teacher
FRIDAY NOV. 15	2:30-2:45	The Murry Twins...Dert & Bob Twin Harmonies...Vocal & Instrumental
	2:45-3:00	"Louise Whitmore Sings" Melodies for Remembrance
	3:00-3:15	The Television Dancing Lesson Instruction in the Newest Steps
	3:15-3:30	Test Patterns & Visual Novelties
	8:30-8:45	Harmony & Rhythm...The Dorsay Sisters Songs by Mary, Christine, & Lertha
	8:45-9:00	"Travelling Light"...One Act Play The Players Club of Boston
	9:00-9:30	The W1XG Athletic Club...YMCA Stars Varied Athletic Exhibitions

While All Programs Are Subject To Change, W1XG Now Presents
Two Hours Of Television Transmission Daily, Mon. thru Fri.
Afternoons, 2:30-3:30.....Evenings, 8:30-9:30

Fig. 6 News Release Schedule

Baird provided a documented testimony⁶⁸, noting that he was now Vice President of GTC. He confirmed that GTC was not interested in manufacturing but only broadcasting. He discussed the 15 versus 30-frame rate and agreed that FM would be desirable for TV sound. He claimed that TV programming did not have to be expensive and that stations should be on the air at least five hours a day. Concerning color television, he

believed that it would have to be an electronic system. [Not the mechanical CBS system under consideration.] The needs of National Defense, he believed, would not limit the development of commercial TV. He made some comments concerning sync pulse standardization. Baird explained that when Ida Glover died [Jan.4, 1939], a principal source of GTC income was removed. Her block of stock was purchased by Thompson Guernsey in 1940 and his subsequent financial support allowed development and programming to resume [Guernsey had been elected president of GTC].

RCA replied⁶⁹ to a Baird request to sell developmental projection tubes, C-7410 for \$250 each.

GTC presented a field test report⁷⁰, Feb 17th to Feb 22nd listing various locations in Boston. Problems noted were vibrator DC to AC converter interference and difficulties with antennas. Receivers used were: a 'small US receiver, a large US receiver, new Dumont and old Dumont sets.

Boston Edison informed GTC that AC nominal 122 volts, single phase would be installed at the premises of GTC; 249 Tremont St. Existing DC service will be maintained.⁷¹

On March 5th, GTC sent, to FCC, a copy of the application, File No. B1-MLVB-14, Docket#5989, responding as requested by the Commission on January 28th, 1941.⁷²

WIXG transmitter log sheets, from 17 February to 28 March, indicated that during that period, GTC was telecasting approximately 750 watts input, live and film video programming. Sound had been added by the end of February.⁷³

In support of an application for license renewal to the FCC, a document⁷⁴ was issued on April 8th reiterating the items noted in the December 9th, 1940 application. Additional items were noted to establish that WIXG had continually worked to advance the science of electronic television. "The main program which the applicant has now laid out for itself is to broadcast to the public. It [GTC] believes that its broadcasts are already of acceptable technical quality but it expects and believes that in the course of such broadcasts it may experiment and improve its own technique in the transmission of television signals." The document additionally pointed out that: "Station WIXG is and has been the only station broadcasting television signals in New England." Technical data was presented to show that New York City station W2XBS would not interfere with WIXG, both on channel 1. "The most important part of the experimental work at WIXG during the past few months has been in the preparation and practical testing of pictures transmitted at 15 and 30 frames per second, using 729 and 441 lines respectively." Baird pointed out that until such tubes became available from RCA in 1938, they built their own iconoscopes, monoscopes, and kinescopes.

The present staff of WIXG:

Thompson L. Guernsey	General Manager
Fred Swain	Office Manager
Stuart L Mosher	Program Director
Prescott Wellman, Jr.	Assistant Program Director
Gerald Brewster	Cameraman
Fred Cole	New Program Ideas
Sherman L. Whipple, III	Demonstration Manager
Hollis Baird	Chief Engineer
Fred Kuehl	Television Engineer
Fillmore Hamilton, Jr.	Television Engineer

A detailed Balance Sheet and Inventory were additionally provided. The net worth of the Corporation was listed at just under \$70,000.

The last official document in the package of materials obtained from Hollis Baird is an April 30th FCC report titled, "Rules and Regulations and Standards of Good Engineering Practice for Television Broadcast

Stations”⁷⁵ Here, for the first time, 525-line interlaced TV is officially defined. Also listed are operators authorized to operate television stations. GTC (W1XG) was not listed. Besides the obviously expected NBC and CBS, Leroy’ Jewelers and Balaban & Katz Corp. also received go-aheads!

Baird did include an undated **post war** newspaper clipping from the Christian Science Monitor⁷⁶ which headlines, “Westinghouse to Transmit Television in the Boston Area.” The article states that Westinghouse Radio Stations, Inc, has been granted the first post-war TV station construction permit. It goes on to say that the only other holder of a permit is the Raytheon Manufacturing Company. Paramount, and by stock ownership, Dumont Labs, was noted to be an applicant for a TV license. But further down the page, the article explained, ”Considerable television experimenting was done in Boston last summer by Twentieth Century Fox interests at the *General Television* studios at 70 Brookline Avenue...the station there has been modernized and could transmit pictures at the push of a button.” And yet, the news item concludes by saying that Fox has now withdrawn its interest in Boston.

Finally, in a September 28th, 1946 Television Digest article⁷⁷, it is noted that Raytheon (Waltham – WRTB, channel 2) was granted a TV station Construction Permit on May 17th, 1946 along with Westinghouse (Boston – WBZ, channel 4) on August 9th. No mention of W1XG, General Television.

Notes:

1. Ken McIntosh letter Aug 26, 1985
2. Hollis Baird obituary, The Patriot Ledger, Melissa Kordewich, 17 March 1990.
3. But, according to a Baird family historian, whose father was a friend of Hollis’ dad, Hollis was born in River de Chute, New Brunswick, CA, delivered by his great grandmother (the local midwife). His parents, Dan Baird and Ida Semple, owned and operated a general store next to the millpond of a sawmill in that town. *Bill Gretroy note via Early Television Foundation*.
4. Interview with Hollis Baird.
5. Joseph Calcaterra, The Boston Television Party, Radio News, May 1931.
6. Federal Radio Commission, Docket Nos. 1572 & 1796, 12 September 1933.
7. FRC Application for Radio Station Construction Permit, 16 December 1933
8. Federal Radio Commission documents, 21 August, 1934
9. Federal Radio Commission documents, 21 February 1935
10. Federal Radio Commission documents, 25 February 1936
11. Report of Experimental Visual Station W1XG, 2 December 1936
12. FCC, 26 January 1937,
13. RCA Radiogram, March 16, 1937
14. Western Union telegram, Randall to Baird, April 20, 1937.
15. Letter from RCA engineer, Howard Lawrence, 5 January 1988. Howard worked at GTC while attending MIT.
16. FCC license renewal application, December 10, 1937.
17. FCC, 19 January 1938.
18. FCC, Notice, File No. B1-PVB-12, Docket No. 5002, 3 February 1938. Company TV stations named; GE, CBS, NBC, Radio Pictures, RCA, Philco, Farnsworth and GTC.
19. Television Program For The Next Ninety Days, 15 March 1938.
20. March 31 letter, Baird to Allen B. Dumont.
21. RCA June 29th letter to Hollis Baird.
22. The Program for Television Work (not dated).
23. Western Union telegram, Oct 11, 1938, Dumont to Baird.
24. October 13th letters, Baird to Dumont.
25. October 31st letter, Baird to Dumont.
26. November 21st letter, Baird to Dumont.

27. Various log sheets detailing film projector and studio camera tests.
28. December 2nd letter, Baird to Mortimer Loewi, c/o Allen B. Dumont Laboratories.
29. FCC license renewal application, December 5, 1938.
30. FCC Report No. 340, Decisions of the Commission, January 9, 1939.
31. IRE Technical Committee meeting, January 11, 1939.
32. February 27th letter from Baird to Mr. Benjamin Trustman,
33. March 7th letter to Trustman, listing advantages of purchase of the controlling interest in GTC.
34. March 23rd draft legal document between Baird and Aaron Smith (representing?).
35. Letter of July 5th, 1939, Baird to Loewi.
36. FCC July 27th, letter to GTC.
37. Letter of July 28, Baird to Charles B. Newhall.
38. FCC Application for Modification, September 5, 1939, including September 19, 1939 'Report Covering Application For Modification of Visual Broadcasting License W1XG'
39. Baird note: Brief History of Paramount Dumont negotiations With GTC.
40. Letter of November 6, from Fred Swain, GTC clerk, to Hollis Baird.
41. Letter of November 24 from GTC to FCC.
42. FCC Application for Renewal of Broadcast Station License, 6 December 1939.
43. Dec 9th letter, Baird to Paul Raibourn, Paramount Pictures, Inc.
44. Suggestions for Television Programs in the Boston Area.
45. Dec. 10th report: Television Development Work Being Conducted at Television Station W1XG.
46. Telegram, January 10, 1940, Baird to FCC, agreeing to explain why Boston should have channel 1.
47. January 13 letter, Baird to the FCC. Possibly presented in person on the 15th.
48. January 23rd FCC letter to GTC.
49. January 29th FCC letter to GTC.
50. February 17th letter, Hollis Baird to Mr. John Henderson.
51. February 23rd transmittal to the FCC, for renewal of W1XG license, File No. B1-RVB-4.
52. FCC letters to GTC, 27 February, 22 March.
53. FCC letter to GTC, April 9, 1940.
54. GTC balance sheet dated April 23rd, 1940, prepared by Fred Swain, clerk of the Corporation.
55. GTC letter to the FCC, dated May 7, 1940, together with Application, file No. B1-PVB-69 dated April 24th.
56. W1XG Television Broadcasting Schedule for six weeks, beginning May 20th.
57. GTC amendment to application for Audio Transmitter, File No. B1-PVB-69, May 25, 1940.
58. Transmitter Log of W1XG, detailing video transmitter information.
59. FCC letter to GTC, June 27, 1940, re: Application B1-MLVB-14, modification of license.
60. FCC letter to GTC, July 2, 1940, rejected aural application, File No. B1-PVB-69.
61. FCC letter to GTC, July 5, 1940.
62. Hollis Baird letter to Mr. Wm. E. Leahy, July 11, 1940.
63. FCC letter to GTC, September 24, 1940.
64. Baird transmittal to attorney, William Leahy, for filing with the FCC, December 9, 1940.
65. Television Report. This appears to have been an attachment to a license renewal application.
66. H.S. Baird report, "Relations between the General Television Corporation and the Federal Communications Commission since late 1939", not dated.
67. Appendix A, not dated, and missing the FCC application. The latest date shown is Dec 1940.
68. Baird's testimony (Latest date – January 1, 1941). [Probably made at the FCC]
69. RCA letter of February 18, 1941.
70. Field Tests during Week of February 17th to 22nd 1941.
71. Boston Edison letter of March 5, 1941.
72. GTC letter to T. J. Slowie, Secretary, FCC, March 5, 1941.
73. W1XG transmitter Log sheets.
74. Application to FCC, April 8, File No. B1-MLVB-14, Docket No. 5989, File No. B1-PVB- 69, Docket No. 5988, with attachments.

75. FCC, Television Report, Order, Rules and Standards, May 3, 1941.
76. Newspaper clipping, undated, but appearing to be early 1946.
77. Television Digest, Supplement No. 18A, Sept.28, 1946